REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed May 14, 2003 (Paper No. 3). Upon entry of this response, claims 1-28 are pending in the application. In this response, claims 1, 10, and 19 have been amended. Applicant respectfully requests that the amendments being filed herewith be entered and request that there be reconsideration of all pending claims.

1. Rejection of Claims 1-28 under 35 U.S.C. §112

Claims 1-28 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as his invention. In particular, the Office Action states that:

> claim 1 recites the limitation "the region representing an error metric within which each primary signal point may be located" on lines 8 and 9. The language "**may** be located" is not a definite language to indicate whether "each primary signal point" is necessary to be located in "the region".

Claim 1 is amended to recite "each primary signal point surrounded by an error-free slicing region." Accordingly, Applicant believes the amendment overcomes the rejection of claims 1-28, and requests that the rejection be withdrawn.

2. Rejection of Claims 1-28 under 35 U.S.C. §102

Claims 1-28 have been rejected under §102(b) as allegedly anticipated by *Goldstein et al.* (U.S. 5,394,440). Applicant respectfully submits that these rejections have been overcome by the claim amendments made herein, or have been rendered moot by claim cancellation.. A proper rejection of a claim under 35 U.S.C. §102 requires that a single prior art reference

9

disclose each element of the claim. *See, e.g.*, *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d

1540, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983).

a. Claims 1, 10, and 19

Applicant has amended claims 1, 10, and 19 to more particularly point out and distinctly

claim the subject matter which Applicant regards as his invention. Applicant respectfully

submits that *Goldstein et al.* fails to teach, disclose or suggest at least "each secondary signal

point in the subset associated with one of the primary signal points being located within the

error-free region surrounding the associated primary signal point" as recited in amended claims

1, 10, and 19.

Goldstein et al. discloses a primary and a secondary constellation. The relationship

between the primary constellation points and the secondary constellation points is described as

follows:

> [T]he two-dimensional (2D) constellation for the secondary
> channel data must be constituted from points which are drawn
> from the same points from which the 2D constellation used for the
> primary channel data is obtained. Preferably, the 2D constellation
> comes from a 2D grid as taught and shown in Wei U.S. Pat. No.
> 4,713,817 and Goldstein U.S. Pat. No. 5,048,056 and Ser. No.
> 07/640,260, and the 2D constellation for the secondary channel
> data is a subset of the same 2D grid.
>
> Turning to FIGS. 3*a* and 3*b*, two preferred 2D constellations for
> the secondary channel data are seen. As seen in FIGS. 3*a* and 3*b*,
> the 2D constellation in the mapper for the secondary channel data
> is divided into quadrants by a pair of perpendicular lines through
> the origin, and points from the 2D grid defined by the primary
> constellation are selected as possible secondary channel points for
> each quadrant. In order to gain reliability, the selected points
> whithin a quadrant are preferably clustered together and are far
> from the quadrant boundaries (as seen in FIGS. 3*a* and 3*b*). Also,
> in order to be rotationally invariant, the selected points in each
> quadrant are the rotations of selected points in the other quadrants,
> again as seen in FIGS. 3*a* and 3*b*. Further, because the trellis code
> is preferably based on the partioning of the 2D grid into two-

dimensional partition elements, a single point from each two-
dimensional partition element is preferably included in each
quadrant to guarantee the continuity of the trellis encoding. (Col. 6,
lines 40 to 68.)

In contrast, in Applicant's claimed invention as defined in amended claims 1, 10, and 19,

the secondary constellation is embedded within the primary constellation. (Specification, p. 20,

line 5 to p. 21, line 30). FIG. 7 shows the primary constellation, with each primary point

surrounded by an error-free slicing region 506. FIG. 8 shows the secondary constellation

embedded within the primary constellation. Error-free slicing region 506 in FIG. 7 is shown as

601 in FIG. 8. In FIG. 8, the region 601 surrounding the primary signal point also includes a set

of secondary points 602, 604, 606, and 608. Applicant respectfully submits that *Goldstein et al.*

does not disclose, teach, or suggest the relationship between primary and secondary points

recited in amended claims 1, 10, and 19.

For at least the reason that *Goldstein et al.* fails to disclose, teach or suggest "each

secondary signal point in the subset associated with one of the primary signal points being

located within the error-free region surrounding the associated primary signal point" Applicant

respectfully submits that amended claims 1, 10, and 19 overcome the rejection. Therefore,

Applicant requests that the Examiner's rejection of claims 1, 10, and 19 be withdrawn.

b. Claims 6, 8, 15, 17, 24, and 26

Applicant respectfully submits that *Goldstein et al.* fails to teach, disclose or suggest at

least "a fractional encoder" as recited in claims 6, 8, 15, 17, 24, and 26. The Office Action

asserts that this teaching can be found in FIG. 2 of *Goldstein et al.* However, FIG. 2 and the

corresponding text disclose a conventional trellis encoder, rather than a fractional encoder as

recited in claims 6, 8, 15, 17, 24, and 26. Furthermore, Applicant can find no discussion of a

fractional encoder anywhere in *Goldstein et al.*

11

For at least the reason that *Goldstein et al.* fails to disclose, teach or suggest "a fractional encoder," Applicant respectfully submits that *Goldstein et al.* does not anticipate claims 6, 8, 15, 17, 24, and 26. Therefore, Applicant requests that the Examiner's rejection of claims 6, 8, 15, 17, 24, and 26 be withdrawn.

c. Claims 9, 18, and 27

Applicant respectfully submits that *Goldstein et al.* fails to teach, disclose or suggest at least the feature of "wherein the plurality of signal points are arranged as a circular signal constellation," as recited in claims 9, 18, and 27. *Goldstein et al.* discloses primary and secondary constellations with particular characteristics, as discuss above with regard to claim 1. However, Applicant can find no specific discussion in *Goldstein et al.* of the shape of the primary constellation. Figures 3*a* and 3*b* illustrate only the secondary constellation.

For at least the reason that *Goldstein et al.* fails to disclose, teach or suggest the feature of "wherein the plurality of signal points are arranged as a circular signal constellation," Applicant respectfully submits that *Goldstein et al.* does not anticipate claims 9, 18, and 27. Therefore, Applicant requests that the Examiner's rejection of claims 9, 18, and 27 be withdrawn.

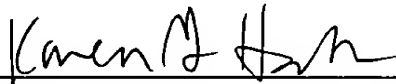### d. Claims 2-5, 7, 9, 11-14, 16, 20-23, and 25

Since claims 1, 10, and 19 are allowable, Applicant respectfully submits that claims 2-5, 7, 9, 11-14, 16, 20-23, and 25 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicant respectfully requests that the rejection of claims 2-5, 7, 9, 11-14, 16, 20-23, and 25 be withdrawn.

CONCLUSION

Applicant respectfully requests that all outstanding objections and rejections be

withdrawn and that this application and presently pending claims 1-28 be allowed to issue. If the

Examiner has any questions or comments regarding Applicant's response, the Examiner is

encouraged to telephone Applicant's undersigned counsel.

Respectfully submitted,

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